

REMARKS

Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Claims 1, 4, 7 and 8 have been amended. The amendment to claim 8 is to correct a clerical error and does not narrow the scope of that claim. No new matter has been added.

This amendment changes claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending the claims as set forth above, claims 1-9 are now pending in this application.

Rejections under 35 U.S.C. §§ 102 and 103

Claims 1, 2, 4-5 and 7-8 stand rejected under 35 U.S.C. § 102(e) as being anticipated by alleged Applicant's Prior Art (Figures 1b and 6b) (hereafter "AAPA"). Claims 3, 6 and 9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over AAPA in view of U.S. Publication No. 2004/0004285 to Cheng et al. ("Cheng"). Applicant respectfully traverses these rejections for at least the following reasons.

Independent claim 1, as amended, recites "wherein said embedded conductor layer is formed between said thin film conductor and said external connection terminal." The AAPA and Cheng fail to disclose this recited arrangement of layers in the context of that claim, or the advantages attendant thereto.

In contrast to the arrangement of the embedded conductor layer, thin film conductor and external connection terminal, as recited in claim 1, Figure 6b of AAPA illustrates the thin film conductor 5 to be between the solder ball 4' (which will be formed into the external connection terminal) and the embedded conductor layer 6'. Thus, in Figure 6b the embedded conductor layer 6' is not formed between the thin film conductor 5 and the external connection terminal, and AAPA fails to anticipate claim 1.

Independent claim 4 recites “wherein said thin film conductor is formed between said wiring and said embedded conductor layer.” The AAPA also fails to suggest this arrangement of layers as recited in claim 4. Figure 6b illustrates the thin film conductor 5 on one side of both the embedded conductor layer 6’ and the wiring (shown at the bottom of Figure 6b), not between the embedded conductor layer and wiring. Thus, AAPA also fails to anticipate claim 4.

Independent claim 7 recites the steps of “forming a thin film conductor on the surface of said wiring pattern and at the bottom of said opening” and “forming an embedded conductor layer in said opening and on the surface of said thin film conductor formed at the bottom of said opening.” The AAPA also fails to suggest this combination of steps as recited in claim 7. Figure 6b illustrates the thin film conductor 5 formed on the embedded conductor layer 6’, not forming the embedded conductor layer 6’ on the thin film conductor 5 as recited in claim 7. Thus, AAPA also fails to anticipate claim 7.

Cheng was cited for allegedly disclosing an embedded conductor layer having a thickness of 25 microns, but fails to cure the deficiencies of AAPA.

Moreover, claims 1, 4 and 7 recite “said embedded conductor layer is of a conductor that has a rate of solution to tin or an alloy including tin lower than that of gold.” This restriction on the composition of the embedded conductor layer provides advantages in the instance that the embedded conductor layer is formed adjacent an external connection terminal made of tin or an alloy containing tin. Specifically, in this case the growth rate of an intermetallic compound layer to be grown between the embedded conductor layer and the external connection terminal is smaller than for a conventional intermetallic compound layer. As compared to conventional semiconductor devices, the intermetallic compound layer thus formed is less subject to breaking and therefore the external connection terminal can be prevented from falling off the wiring board. AAPA and Cheng fail to suggest this advantage.

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date April 27, 2005

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